TRAFFIC ENGINEERING

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ON STREET AND HIGHWAY TRAFFIC

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NEWS OF THE INSTITUTE OF TRAFFIC ENGINEERS

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A DIGEST OF CURRENT LITERATURE

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130. SURVEY OF STREET TRAFFIC CONDITIONS OF NEW ORLEANS. The recently published "Survey of Street Traffic Conditions of New Orleans" is a mimeograph report prepared with the assistance of the Works Progress Administration in cooperation with the New Orleans Department of Public Safety.The work was under the supervision of Paul L. Ristroph, City Traffic Engineer.

The report is an 8½" by 11" volume consisting of 312 pages plus an appendix of supporting data. It includes a summary of primary recommendations taken from the detailed conclusions and recommendations of the eight chapters and the proposed traffic ordinance. The chapters, in addition to the summary of primary recommendations, are: Traffic Accident Analysis, Cordon Count of Central Business District, Vehicle Volume Facilities, Driver Cooperation in Traffic Control, Pedestrian Cooperation in Traffic Control, Traffic Control Devices, Traffic Law Enforcement (Including Courts, Police, Drivers' and Chauffeurs' License Bureau, Inspection of Motor Vehicles, and Traffic Code), Digest of New Orleans Traffic Regulations, and Proposed Traffic Ordinance.

Throughout the report, the procedure was to present the facts - in illustrative form whenever possible. These facts were then analyzed, the basic principles involved were indicated,conclusions were drawn and detailed recommendations were made on each particular phase of the report.

The Summary of Primary Recommendations presents a plan of administrative organization adaptable to the City of New Orleans; recommendations pertaining to the street system and street improvements; solution of parking problems; minimizing hazard and delays at railroad grade crossings; proposed speed limits; improvement in the installation and operation of Drivers' License Bureau, Motor Vehicle Inspection, Traffic Court and Violations Bureau, Office of Traffic Engineer, and means of coordination of activities of same;the training of traffic police; the reporting of accidents;the Traffic Code; and educational improvements.

A somewhat unique feature is that provisions are made for the licensing of drivers and the examination or inspection of motor vehicles by the City. The State of Louisiana does not have a law requiring the licensing of all drivers or the in-

spection of all vehicles. New Orleans considers these procedures essential to its own safety program and therefore these items are included.

Several of the 57 illustrative charts, graphs and maps show proposed design of complicated street intersections. These drawings are of particular interest to those charged with design of street facilities.

Although the formal report was not released until December 1938, municipal officials concerned with traffic administration and improvements were acquainted with the findings prior to the release of the publication. As a result, many of the recommendations have already been carried out and others are in progress.

The reduction of accidents and fatalities experienced in New Orleans during the year 1937 was undoubtedly instrumental in placing that City fourth, within its population group, in the National Traffic Safety Contest. This reduction in fatalities was continued during 1938. These accomplishments may be attributed somewhat to the Survey as it aroused public interest, furnished information and recommendations to the public and to those concerned with the various phases of traffic administration, engineering, enforcement and education, and furnished the basis of a coordinated program for traffic improvements.

131. TRAFFIC ENGINEERING--Leslie J. Sorenson, President of Institute of Traffic Engineers (Orderly Traffic)

Traffic engineering represents the technical engineering approach to the problem of safe and orderly movement of street and highway traffic through the proper design or redesign of roadway and structures, installation of control devices, analysis of traffic flow movements and kindred factors. Like all other young professions it is confronted with growing pains and several very specific problems.

The first problem is that of acceptance. All organizations engaged in safety and traffic work on a national basis, and most of the larger cities, as well as some states, recognize the contribution which traffic engineering has made and can make through a solution of traffic difficulties. As yet, however, there has not been a general recognition of the direct advantage of employing competent traffic engineers in the middle-sized and smaller group of cities. There are,of course, some notable exceptions. The principal need is for exercising the traffic engineering function by all states and cities either through separate departments or the best available engineering division.

The second direct problem is that of professional organization and coordination. It has a definite bearing upon the problem of acceptance. The early leaders in traffic engineering activities voluntarily organized the Institute of Traffic Engineers to stand as a symbol of their common professional ideals. As increasing numbers of men have come into traffic engineering work, they have affiliated with the Institute. The need for the organization is indicated by the vitality which has shown under very difficult economic circumstances and, of necessity, with limited financial support from its members.

A third immediate problem is that of professional training. To a considerable degree this need has been answered by the liberal endowment of the Bureau for Street Traffic Research in Yale University by the Automotive Safety Foundation and through the personal generosity of Mr. Alfred P. Sloan. The urgent need for this type of professional training is indicated by the facility with which the engineering graduates of the Bureau obtain satisfactory professional positions in public and private organizations.

There is therefore, a growing need that traffic engineering instruction, at least in its elements, should be incorporated in the curricula of engineering schools throughout the country. The best hope for this lies, in our opinion, in a strengthened position for traffic engineering activities on a national basis through the Institute of Traffic Engineers.

132. HOW ROCHESTER HANDLES ITS TRAFFIC PROBLEM--Leon R.Brown, Research Engineer, Rochester Transit Corporation (Civil Engineering, December 1938)

A movie "Traffic in Rochester" presented by the Traffic Committee of the Rochester Engineering Society in 1926 developed considerable interest. In 1927 the Committee used 2000 Boy Scouts to start a traffic survey which has been continued. This includes half-hour counts of all vehicles entering and leaving the business district,counts on bridges,counts of parked vehicles, counts at signals, traffic flow diagrams, speed tests, etc.

Passenger automobiles carried an average of 1.6 persons, as is true in other cities. In 1932 women drivers, 7.4% of the total number of drivers and this corresponds very closely with the percentage of women drivers who have accidents.

The parking survey is important. Parking spaces occupied or unoccupied are noted, and license numbers are recorded hourly. Parking violations are thus discovered 50% of the cars were parked illegally, though there is ample space in downtown garages.

Forty-one percent of drivers make full stops at stop signs, 29% slow down, 36% slow just enough to make the turn. fifty-five per cent make no signals when turning left, more make no signals for right turns. On forty foot streets 92% of the motorists drove at least five feet from the curb.

On Main Street 11,000 automobiles or 75% of the traffic carried 40% of the passengers, while 672 street cars and busses comprising 5% of the traffic carried 60% of the passengers.

133. VEHICLE-ACTUATED CROSSING PROTECTION--E. J. O'Meara (Traffic Control & Facilitation Section, American City, January 1939)

Signalization of the intersection of County Trunk Highway "A" and State Trunk Highway 100 at Hales Corners, Milwaukee County, Wisconsin, presented a rather unusual problem because the tracks of an electric interurban railway run diagonally through the center of the intersection. No free-wheel traffic can be allowed to move while the intersection is being used by the electric railway, for the path of the train cuts almost all the possible traffic paths through the intersection.

The problem was solved by using a traffic-actuated dispatcher with vehicle detectors on all approaches. The signals used at this intersection are the standard type approved by the State Highway Commission of Wisconsin, consisting of four double-faced, near-right, far-left signals, giving a positive stop indication on the far-left corner to prevent drivers from having to crane their necks to see the near signal.

The installation operates like all Electro-matic full traffic-actuated systems, assigning the right-of-way only to those approaches which need it, and for only sufficient time to permit the use of the common area of the intersection by the several traffic flows at a maximum efficiency. When a train approaches, a special railroad preemptor automatically takes command of the signals and immediately causes an amber indication to be shown to traffic which previously had the right-of-way, followed by red on both highways. This red indication remains until the last car of the train has cleared the intersection, while a special signal shows the engineer that all vehicular traffic stopped. The green light is then given to the highway which has been deprived of it for the longest time; from this point on, being controlled entirely by the Electro-matic dispatcher in response to the actuations which have been received from the various vehicle detectors.

135. UNITED STATES AND EUROPEAN PRACTICES IN ROAD DEVELOPMENT--Thomas H. MacDonald (Roads and Streets, February, 1939)

Accident Reporting--The indication that the highway officials are including in their field a much broader recognition of utilization problems was the careful consideration of the subject of accident reporting on such a basis that the results between countries will be reasonably comparable. The League of Nations has taken action to suggest the unification of the statistics of road traffic accidents and the Congress adopted a recommendation to appoint an international committee to give further attention to a form of accident reporting that might be used universally. Certainly this is a movement which the United States can well endorse and support. Out of the discussions came a unanimous agreement that each road accident should be investigated and a record made of the locations, particularly as to frequency, for the purpose of determining if road conditions are a cause, and of formulating an emergency program designed to eliminate hazards thus disclosed.

An interesting discussion had reference to the light-reflecting characteristics of road surfaces, in which was pointed out the distinction between the light intensity of an illumination from fixed units and the light reflected to the drivers of motor vehicles from surfaces illuminated by headlights.

In both these groups of questions, the characteristics of which have been indicated by the examples given, it is evident that a very large amount of serious, well-trained laboratory research and field observation is being conducted by the highway administrations of the various important countries, their universities and technical schools. In general, the enlarged fields of scientific investigation and research related to highway transport have been somewhat later developed in European countries than in the United States. There are some exceptions, and it will be profitable for the United States to keep close contact with the progress in the solution of technical problems which will inevitably follow the more intensive work now being done upon them.

Segregation of Traffic--There is unlimited support for the basic principle that the highways must be designed for all activities in which people engage. If we look fairly at all aspects of highway use, there are no roads which do not justify that provision in the design be made for more than one type of traffic.

The Right to Pass--The highway evolved not as a physical

facility but as an inalienable "right of the individual to pass". It is apparent that this "right to pass" is a universal demand of the individual, and so the highway design cannot approximate perfection until provision is made for every form of use that is a proper interpretation of this right. This does not mean that all types of use must be provided for within the limits of single rights-of-way.

136. FIND THE TRAFFIC LIGHT--Editorial (Safety Engineering, February 1939)

The many and vari-colored lights of New York's Great White Way present a hazard which is held in check only by the vigilance of an alert traffic force. Though every block on Broadway is about 300 feet and almost every intersection has a traffic light stanchion, it is almost impossible to single out in the blaze of flashing illumination the discs of light on which depends actual safety to life.

At least 40% of the drivers behind the wheel suffer from defective vision in some stage, one of which often enough is color blindness. The difficulty experienced by such drivers in distinguishing the color of traffic lights is dangerous enough without adding the factor of confusion in trying to locate the lights. Bad weather intensifies this hazard.

The Police Department of New York recognized the hazard of obscured traffic lights as evidenced by their recommendation to the City Council that Neon signs be placed above the second story of Buildings. This recommendation has been tabled.

It would seem that the municipal authorities of larger cities in the country should recognize the danger of hidden traffic lights and take necessary steps to place the lights in such positions that they could be plainly seen. If it means raising the height of the light standards, moving the stanchion to the edge of the curb, regulating the size and type of commercial signs at intersections, suspending the light over the intersection or adopting other remedial methods, the safety movement can be depended upon to lend the weight of its influence, to this constructive effort.

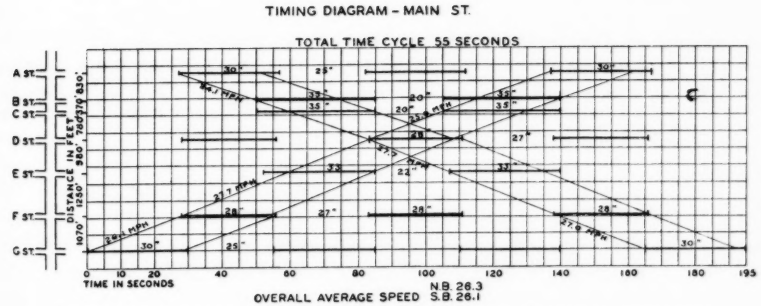
138. PLANNING PROGRESSIVE SIGNAL SYSTEMS--William C. Brandes (Traffic Control & Facilitation Section, American City, February 1939)

Under what conditions is it advisable to interrelate signal timing? The answer is wholly dependent upon certain factors. Maximum spacing for system operations between ad-

jacent signalized intersections varies with the type of street and the traffic using it, with local interferences, prevailing speeds, and still other factors. Spacing can be measured in time as well as in distance. Generally speaking, on a street carrying a considerable amount of through traffic with a minimum amount of local interference including non-signalized intervening intersections, signals spaced one-half mile apart might be time-related if prevailing speeds of passenger vehicles are approximately 25 to 30 miles per hour. When signals are encountered by moving masses of vehicles in periods of time up to about 80 seconds, they can be interrelated with advantage to the motorist. On the other hand, on narrow streets where traffic interferences are prevalent either mid-block or at non-controlled intersections, signals spaced $\frac{1}{4}$-mile apart might better operate independently. A time-space diagram usually has the distance scale in feet on the vertical, and the time scale in seconds on the horizontal. A valuable aid is a sketch of the street with all its intersections conforming to the distance scale in the left-hand margin, as shown in the accompanying diagram. "Go" intervals for the main street, as determined by traffic requirements at the individual intersections, are represented by horizontal lines on the second scale opposite the intersecting street, while spaces between lines are cross-street movement.

In timing any group of signals we have one constant and two variables. Distances between intersections are fixed--unless the intersections to be signalized can be selected for their spacing.The total time cycle and its divisions can vary slightly.

The cycle to be selected should be the shortest cycle that will efficiently pass the traffic at the busiest intersection at the same time allowing proper speeds through the system.



TYPICAL TIME-SPACE DIAGRAM CONTAINING MANY FEATURES DISCUSSED IN THE TEXT

This form of diagram is used by traffic engineers to determine the correct timing of signals at each intersection so that vehicles may pass the full distance without delay

If one or more intersections should require three movements or phases, that feature generally will determine the minimum time cycle.It may be necessary to draw up time-space diagrams for several cycles and select the best. The speed to be set-up in the diagram should be that speed best suited to conditions in the street over each particular section, considering each direction of travel independently. Conditions may vary between sections, and it is not desirable to set up a uniform speed throughout for the mere sake of obtaining a straight-line speed curve on the diagram. On the other hand, material changes in speeds should be avoided over similar sections of street.

The time consumed for movement of a vehicle from one signalized intersection to the next (what we might term "running time") for the ideal two-way progression will be the total time cycle,or one-half the total cycle, or 1½ times the total cycle, etc. Thus, signals spaced ¼-mile apart would provide speeds of 30 miles per hour in each direction on a 60-second cycle, with a running time of 30 seconds between signals. A 45-second cycle, allowing 45 seconds running time, gives a speed of 20 miles per hour. That same cycle will allow 26.7 miles per hour, or 67.5 seconds running time, if the signals are spaced ½-mile apart. Spacing of 1/8-mile allows 20 miles per hour on a 45-second cycle.

Unequal distances between signals call for variations in signal speed or a reduced "go" interval for through movement-what is termed as "width of through band." By allowing the speed line, which represents the first vehicle of a group or platoon, to cut through the "go" line after its beginning, a straight speed line may be retained. It is here that knowledge of the street will determine the extent to which variables can be changed to bring about a satisfactory timing.

Interelation of signals may be accomplished, two methods:

(1) Individual synchronous-motor control units operating in definite time relation by virtue of a common source of electrical supply. With reliable electrical service, modern equipment of this type functions quite satisfactorily.

(2) Cable-interconnected controls which are maintained in time step by means of a centrally located master control unit from which numerous flexibilities of operation can be sent out over the system.

With an efficient progressive signal system in successful operation, the traffic engineer can confidently expect public approval and requests for further coordination of signals.

NEWS ABOUT THE TRAFFIC ENGINEERING PROFESSION

PARKING RESTRICTION INFORMATION WANTED. Mr. H. E. Stedman, Traffic Engineer, Department of Public Safety, Des Moines, Iowa has asked for some information from those cities that have had experience in applying early morning parking restrictions from 7:30 to 9:00 A. M. He has asked whether they are to accomplish the following purposes and desires comments.

(1) To enable the easy flow of traffic and proper cleaning of streets.

(2) To encourage delivery in the early morning by making it easier for deliveries to be made at the curb.

(3) To enable the police to better enforce the limited time parking by forcing the all day "chisler"- out of the district.

Will any of you having information along this line, please help Mr. Stedman?

TRAFFIC AND SAFETY ENGINEERING OPENING. It has been brought to our attention that there is an opening in the Traffic and Safety Department of the Chicago Motor Club. Mr. Barton is anxious to obtain a young man who is an engineering graduate and who has had some training. He requests that you communicate directly with him, sending a statement concerning your qualifications and indicating what your salary requirements would be at the start and at the end of about a two year period. Mr. George W. Barton, Director, Traffic and Safety Engineering Department, Chicago Motor Club, 66 East South Water Street, Chicago, Illinois.

HENRY W. OSBORNE. We are pleased to report that Mr. Henry W. Osborne has been appointed Traffic Engineer of Flint, Michigan. His duties start March 1. His work will be done in the Police Department under the newly appointed Chief Anderson formerly of the Wichita Police Department. This town has a population of about 180,000. We congratulate Mr. Osborne on his appointment and extend our wishes for his success.

STANDARD TRAFFIC SIGNS NOT FOR ADVERTISING. (Editorial from

"Better Roads"). Highway signs of an unwanted kind are the subject of a resolution recently adopted by the Institute of Traffic Engineers, opposing the use of standard traffic signs for any advertising purpose or for any other purpose except that for which they are intended, and opposing the placing of the name of any organization, other than the organization having jurisdiction, on any standard highway sign or support.

Ex-County Engineer thinks that the resolution of the Institute should be commended. Considerable progress has been made in the development of uniform and effective signing, and in the restriction of the highway right-of-way to highway purposes. Anything in the way of a set back should be discouraged.

RECOMMENDATIONS FOR SAFETY. (Editorial,"Indianapolis Times" December 17, 1938). "The Citizens Safety Committee recently outlined a 22-point traffic program. Among other things, it calls for the hiring of a competent traffic engineer. But we wish it had emphasized more vigorously the need for a traffic engineer..."

D. GRANT MICKLE. Mr. D. Grant Mickle, Manager, Traffic and Transport Department, Ann Arbor, Michigan visited the headquarters of the Institute, January 23, during an eastern trip in which he participated as an instructor at the Rutgers Institute of Traffic Engineering. Mr. Mickle was also making observations for the Michigan State Department of recent developments in the highway safety design.

COMMITTEE CHAIRMEN. President Sorenson requests that all committee chairmen present a progress report for review and consideration by the Board of Direction at a special meeting which will be called during the Mid-West Safety Conference, May 9, 10, 11, Chicago, Illinois.

HARTFORD TRAFFIC COMMISSION AND TRAFFIC ENGINEER. The city of Hartford,Connecticut has established a Traffic Commission composed of the heads of 5 city departments. It has also created a traffic engineering position within the city govern ment. The traffic engineer will serve as secretary of the newly formed Traffic Commission.

Mr. William E. Egan was appointed to the position of Traff ic engineer by the mayor. Mr. Egan has been associated with the city engineering department and attended the Yale Bureau for Street Traffic Research on a fellowship during 1938.

SALE OF ANNUAL PROCEEDINGS. Last year was a record year for the sale of the ANNUAL PROCEEDINGS, but the sales promotion was left in the hands of a few.

It is up to every member of the Institute to make this year a banner year and to far exceed the sales record of last year. We cannot stress too strongly the importance of your cooperation in this matter. The PROCEEDINGS of the Institute are publications of which we can all be proud and their value to any individual or organization interested in traffic and safety is inestimable. It is the duty of all members of the Institute to use every effort to distribute as many copies as possible of these 1938 PROCEEDINGS. The real value of a wide distribution lies in the advertising and publicity values which will benefit each and every one.

We would like to commend Mr. R. E. Hefron of Lansing for his fine work. Mr. Hefron wrote a fine sales letter to the Michigan State Highway Department and another to 65 of the Michigan municipalities. We have already begun to obtain results. A note of praise also goes to Mr. John F. Gallagher of Philadelphia for his excellent sales record.

MINNESOTA SPEED ZONING APPROVED. The result of a recent telephone poll of scores of Minneapolis drivers conducted by the Minneapolis Journal brought forth the fact that seven to one are in favor of Minnesota's new system of speed zoning of state highways.

The consensus was that speed zoning gives confidence to the man behind the wheel;that safety engineers after conducting careful tests are better judges of what is a safe speed than the driver not familiar with road conditions.

ANNUAL CONVENTION. The annual convention of the Institute of Traffic Engineers will be held in Atlantic City, New Jersey. The date of this meeting will be announced later.

LEWIS W. McINTYRE. Our past president, Lewis W. McIntyre, Consulting Engineer, Pittsburgh, Pennsylvania, stopped off in New York upon his return from a vacation and a Carribean cruise. All traffic engineers take note! Here is one member who is able to do his work and still have time for a little pleasure. If desired, we will have the Board of Direction write a compulsory pleasure trip into the By-Laws.

INDIANA SPEED-ZONE SURVEYS CONTINUE. Engineers of the Traffic Bureau of the Indiana State Highway Commission are continuing

their surveys on Indiana State highway routes through cities for the purpose of establishing speed zones and traffic-control regulations, the commission reports.

Signs designating maximum speeds on state routes in residential and business districts are being erected as soon as surveys are completed. Surveys have been finished in about 200 cities and towns. Both State and local officials participate in the enforcement of limits after the zones have been established.

RECENT PUBLICATIONS.

PSYCHOLOGY AND THE MOTORIST. By Herbert A. Toops and S. Edson Haven. 265 pages. R. G. Adams and Co., Columbus,Ohio, 1938, $2.00.

Messrs. Toops and Haven have produced a singularly interesting and often provocative book bound to evoke discussion in every group concerned with problems of the driver, of traffic and of accidents. Believing that "the day of panaceas in handling the complex phases of motor traffic problem is past," the authors set out to study the situation from the human angle. With the aid of students of psychology they interviewed several hundred drivers of buses, trucks, taxicabs and pleasure vehicles, many of whom had veen involved in serious mishaps. From these, and from newspaper clippings, interviews with pedestrians, visits to hospitals, traffic courts and homes of accident victims, the writers obtained a wealth of criticisms, suggestions and opinions which, after sifting and evaluating, they present as practical ways of improving the car, the road and numerous particular aspects of the traffic control system.

In virtually every one of the fifteen chapters Toops and Haven (the former of Ohio State University, the latter of Wayne University, Detroit) exercise their pointed instruments of skepticism and objective analysis to prick what they term "the fallacies and misdirected efforts of present-day panaceas." "The method we have taken," they readily admit, "is not popular with some; in fact will be anathema to many." The attitudes of drivers,their sense of perception, their habits, characteristics and shortcomings; methods of controlling pedestrian behavior;enforcement and punishment of traffic violators;needed changes in highway design and in the erection and construction of signs and signals; parking needs; innovations that users desire in automobiles, new objectives in gathering and interpreting accident statistics-these are among the host of topics discussed. The viewpoint throughout is fresh, and many novel suggestions highly stimulating to students of the subject with an open mind.

INSTITUTE OF TRAFFIC ENGINEERS

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THE OBJECTIVES OF THE INSTITUTE

The objects of the Institute shall be the advancement of the art and science of traffic engineering, the fostering of traffic engineering education, the stimulation of original research in traffic engineering, the professional improvement of its members, the encouragement of intercourse between men with mutual interests in traffic engineering, and the establishment of a central point of reference and union for its members. (Article I, Section 4 of the Constitution of the INSTITUTE OF TRAFFIC ENGINEERING).

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